AMENDMENTS TO CLAIMS

1 – 50 (CANCELLED)

51. (CURRENTLY AMENDED) A node for use in a communications system that packs and fragments variable-length service data units (SDU) for mapping into variable length protocol data units (PDU), each PDU having a payload area, and a header area, each SDU being associated with a specified connection, the node comprising:

a communications processor configured to pack and fragment service data units associated with ~~the~~ a specified connection into a protocol data unit, including performing the following operations:

allocating bandwidth for the specified connection based, at least in part, on the priority and type of the connection,

establishing a length for the protocol data unit based on the bandwidth allocated to the specified connection ~~in a current frame~~,

mapping a first service data unit to the payload area of the protocol data unit,

determining whether a second service data unit is larger than the remaining payload area of the protocol data unit,

if the second service data unit is not larger than the remaining payload area of the protocol data unit, then mapping the second service data unit to the remaining payload area of the protocol data unit, and

if the second service data unit is larger than the remaining payload area of the protocol data unit, then fragmenting the second service data unit into at least two fragments and mapping the first fragment to the payload area of the protocol data unit, wherein:

the header area of the protocol data unit includes a length field specifying the length of the protocol data unit, and

the payload area of the protocol data unit includes a packing subheader for each service data unit and each service data unit fragment packed in the payload area, the packing subheader specifying the length of a respective service data unit or a respective fragment.

52. (PREVIOUSLY PRESENTED) The node of claim 51, further comprising:

a transmitter coupled to the communications processor configured to map the protocol data unit into frames and transmit the frames from the node.

53. (PREVIOUSLY PRESENTED) The node of claim 51, wherein service data units of different protocols and packet formats are mapped to protocol data units of a common format.

54. (PREVIOUSLY PRESENTED) The node of claim 51, wherein the packing subheader further comprises a fragmentation control field specifying whether the protocol data unit includes a service data unit fragment.

55. (PREVIOUSLY PRESENTED) The node of claim 54, wherein the fragmentation control field comprises at least two bits.

56. (PREVIOUSLY PRESENTED) The node of claim 51, wherein the packing subheader further comprises a fragment sequence number.

57. (PREVIOUSLY PRESENTED) The node of claim 51, wherein the header area of the protocol data unit comprises a packing subheader present field.

58. (PREVIOUSLY PRESENTED) The node of claim 57, wherein the packing subheader present field comprises at least one bit.

59. (PREVIOUSLY PRESENTED) The node of claim 51, wherein the header area of the protocol data unit comprises an encryption control field.

60. (PREVIOUSLY PRESENTED) The node of claim 59, wherein the encryption control field comprises at least one bit.

61. (PREVIOUSLY PRESENTED) The node of claim 51, wherein the header area of the protocol data unit further comprises an encryption key field.

62. (PREVIOUSLY PRESENTED) The node of claim 61, wherein the encryption key field comprises at least two bits.

63. (CURRENTLY AMENDED) A base station for use in a communications system, that packs and fragments variable-length service data units (SDU) for mapping into variable length protocol data units (PDU), each PDU having a payload area, a header area, and being associated with a specified connection, the base station comprising:

a communications processor configured to pack and fragment service data units associated with the specified connection into a protocol data unit including performing the following operations:

establishing a length for the protocol data unit based on bandwidth allocated to the specified connection in a current frame, wherein the bandwidth allocated to the specified connection is established based on one or more communication parameters, including the type of the specified connection,

mapping a first service data unit to the payload area of the protocol data unit,

determining whether a second service data unit is larger than the remaining payload area of the protocol data unit,

if the second service data unit is not larger than the remaining payload area of the protocol data unit, then mapping the second service data unit to the remaining payload area of the protocol data unit, and

if the second service data unit is larger than the remaining payload area of the protocol data unit, then fragmenting the second service data unit into at least two fragments and mapping the first fragment to the payload area of the protocol data unit, wherein:

the header area of the protocol data unit includes a length field specifying the length of the PDU, and

the payload area of the protocol data unit includes a packing subheader for each service data unit packed in the payload area, the packing subheader specifying the length of a respective service data unit.

64. (PREVIOUSLY PRESENTED) The base station of claim 63, further comprising:

a transmitter coupled to the communications processor configured to map the protocol data units for the specified connection into frames together with protocol data units from other connections that share a communication link with the specified connection and transmit the frames from the base station.

65. (PREVIOUSLY PRESENTED) The base station of claim 63, wherein service data units of different protocols and packet formats are mapped to protocol data units of a common format.

66. (PREVIOUSLY PRESENTED) The base station of claim 63, wherein the packing subheader further comprises a fragmentation control field specifying whether the protocol data unit includes a service data unit fragment.

67. (PREVIOUSLY PRESENTED) The base station of claim 66, wherein the fragmentation control field comprises at least two bits.

68. (PREVIOUSLY PRESENTED) The base station of claim 63, wherein the packing subheader further comprises a fragment sequence number.

69. (PREVIOUSLY PRESENTED) The base station of claim 63, wherein the header area of the protocol data unit comprises a packing subheader present field.

70. (PREVIOUSLY PRESENTED) The base station of claim 69, wherein the packing subheader present field comprises at least one bit.

71. (PREVIOUSLY PRESENTED) The base station of claim 63, wherein the header area of the protocol data unit further comprises an encryption control field.

72. (CURRENTLY AMENDED) The base station of claim 63 ~~71~~, wherein the one or more communication parameters further comprises the quality of service (QoS) of the specified connection ~~encryption control field comprises at least two bits~~.

73. (PREVIOUSLY PRESENTED) The base station of claim 63, wherein the header area of the protocol data unit further comprises an encryption key field.

74. (PREVIOUSLY PRESENTED) The base station of claim 73, wherein the encryption key field comprises at least two bits.

75. (PREVIOUSLY PRESENTED) The base station of claim 63, wherein the header area of the protocol data unit comprises a connection identifier field.

76-81. (Canceled).

82. (PREVIOUSLY PRESENTED) A node as claimed in claim 51, wherein the first SDU is a last fragment of a SDU.

83. (CURRENTLY AMENDED) A method of formatting protocol data units (PDUs) from incoming variable-sized service data units (SDUs) for transmission of data carried by the PDUs over a communication channel shared by one or more user connections, comprising, for a specified connection:

provisioning a protocol data unit (PDU), including a header and a payload area, wherein the length of the PDU is established in conjunction with the bandwidth amount allocated to the specified connection in a current frame, the bandwidth amount being established frame-by-frame based on one or more communication parameters associated with the specified connection, including the priority of the specified connection, and general system parameters; and

packing and fragmenting the SDUs associated with the specified connection into the payload area of the PDU based on the current length of the payload area.

84. (PREVIOUSLY PRESENTED) The method of claim 83, wherein the length of the PDU changes as the bandwidth allocated to the specified connection changes.

85. (PREVIOUSLY PRESENTED) The method of claim 83, wherein the step of packing and fragmenting comprises:

mapping one or more SDUs into the payload area of the PDU until a remaining area in the payload area of the PDU cannot accommodate a next SDU;

fragmenting the next SDU into a first and a second fragment, the first fragment having the length of the remaining area;

mapping the first fragment to the remaining area; and

inserting fragmentation header information to indicate the fragmentation state of the payload and to identify the first fragment as being a first fragment.

86. (PREVIOUSLY PRESENTED) The method of claim 85, wherein any SDU fragment includes a fragmentation control field identifying the SDU fragment.

87. (PREVIOUSLY PRESENTED) The method of claim 85, wherein the step of packing and fragmenting further comprises:

mapping the second fragment to a next PDU if the length of the second fragment fits into the length of the payload area of the next PDU; and

inserting fragmentation control information to indicate the fragmentation state of the payload and to identify the last fragment as being a last fragment.

88. (PREVIOUSLY PRESENTED) The method of claim 85, wherein the step of packing and fragmenting comprises:

further fragmenting the second fragment if the length of the second fragment is larger than the length of the payload area of a next PDU to obtain a third fragment having the length of the payload area of the next PDU;

mapping the third fragment to the next PDU; and

inserting fragmentation control information, to indicate the fragmentation state of the payload and to identify the third fragment.

89. (CURRENTLY AMENDED) A method for use in a communications system that maps variable length service data units (SDU) associated with a specified connection according

to a plurality of service level for the data carried by the SDUs, into a protocol data unit (PDU) having a variable-length payload area and a header area, the method comprising:

establishing a length for ~~the~~ a protocol data unit based on bandwidth currently allocated to the connection in a current frame, wherein the bandwidth allocated to the connection is established based, at least in part, on the priority associated with the specified connection ~~on one or more communication parameters~~;

receiving a first service data unit and a second service data unit;

fragmenting the second service data unit into at least two fragments;

packing the first service data unit and a corresponding packing subheader into the payload area of the protocol data unit; and

packing a first fragment of the second service data unit and a corresponding packing subheader into a remaining portion of the payload area of the protocol data unit,

wherein each packing subheader comprises a length field specifying the length of the corresponding service data unit and a fragmentation control field indicating whether the corresponding service data unit is a first fragment, a continuing fragment, a last fragment, or an unfragmented service data unit.

90. (PREVIOUSLY PRESENTED) The method of claim 89, wherein the length of the packing subheaders is variable.

91. (PREVIOUSLY PRESENTED) The node of claim 51, further comprising a classification module for classifying the SDUs based on at least a connection identifier, for enabling packing and fragmenting of the SDUs on the connection in a PDU allocated to that connection.

92. (PREVIOUSLY PRESENTED) The node of claim 91, wherein the classification module uses control protocols specific to each particular type of SDU being classified.

93. (PREVIOUSLY PRESENTED) The node of claim 92, further comprising a convergence sublayer module that processes the SDUs classified by the classification module for service specific connection establishment, maintenance, and data transfer operations.

94. (PREVIOUSLY PRESENTED) The node of claim 93, further comprising a data queuing module wherein the SDUs are sorted based on the connection identifier and individual characteristics.

95. (PREVIOUSLY PRESENTED) The node of claim 91, further comprising a communication control module which prepares a bandwidth allocation map with the bandwidth allocated to each node sharing the communication channel.

96. (PREVIOUSLY PRESENTED) The node of claim 95, wherein the communications processor establishes the bandwidth allocated to each connection from the bandwidth currently allocated to a respective node based on the priority and type of the connections served by the node.

97. (PREVIOUSLY PRESENTED) The node of claim 51, wherein if the first service data unit is larger than the payload area of the protocol data unit, fragmenting the first service unit to obtain a fragment of the size of the payload area of the protocol data unit and mapping the fragment to the protocol data unit.

98. (PREVIOUSLY PRESENTED) The node of claim 63, wherein the one or more communication parameters include an amount of bandwidth requested for the connection and an amount of bandwidth to be shared in the frame with other connections established at the node.